

WHAT IS CLAIMED IS:

1. A floating point comparator circuit for comparing a plurality of floating point operands, comprising:

a plurality of analysis circuits, one for each of the floating point operands, configured to determine a format of each of the floating point operands based upon floating point status information encoded within each of the floating point operands; and

a result generator circuit coupled to the analysis circuits, the result generator circuit configured to generate a result signal based on the format determined by each analysis circuit and based on a comparative relationship among the floating point operands.

2. The floating point comparator circuit of claim 1, further comprising:

a plurality of operand buffers, one of the operand buffers coupled to each of the analysis circuits, for supplying each of the floating point operands to each of the analysis circuits, respectively.

3. The floating point comparator circuit of claim 1, wherein the format of each of the floating point operands is from a group comprising: not-a-number (NaN), infinity, normalized, denormalized, zero, invalid operation, overflow, underflow, division by zero, exact, and inexact.

4. The floating point comparator circuit of claim 3, wherein the format represents one of: a positive overflow (+OV) and a negative overflow (-OV).

5. The floating point comparator circuit of claim 3, wherein the format represents one of: a positive underflow (+UN) and a negative underflow (-UN).
6. The floating point comparator circuit of claim 3, wherein the format represents one of a positive infinity and a negative infinity.
7. The floating point comparator circuit of claim 3, wherein the format represents a combination of at least two of the group comprising: not-a-number (NaN), infinity, normalized, denormalized, zero, invalid operation, overflow, underflow, division by zero, exact, and inexact.
8. The floating point comparator circuit of claim 1, wherein the result signal is used to control a floating point unit.
9. The floating point comparator circuit of claim 8, wherein the result signal controls at least one of: the behavior of a conditional branch, the behavior of a conditional move, the behavior of a conditional trap, and boolean result generation.
10. The floating point comparator circuit of claim 1, wherein the result generator circuit ignores the floating point status information encoded in each of floating point operands when determining the comparative relationship among the floating point operands.

11. A method for comparing a first floating point operand to a second floating point operand, wherein each floating point operand includes encoded floating point status information, the method comprising:

receiving the first floating point operand and the second floating point operand;

determining a first format of the first floating point operand based on the encoded floating point status information in the first floating point operand;

determining a second format of the second floating point operand based on the encoded floating point status information in the second floating point operand; and

generating a result indicating a comparative relationship between the first floating point operand and the second floating point operand, based at least on the first format and the second format.

12. The method of claim 11, further comprising:

comparing the first floating point operand to the second floating point operand.

13. The method of claim 11, further comprising:

controlling a floating point device based upon the result generated.

14. The method of claim 11, wherein the format is from a group comprising: not-a-number (NaN), infinity, normalized, denormalized, invalid operation, zero, overflow, underflow, division by zero, exact, and inexact.

15. The method of claim 11, wherein the step of generating the result indicating the comparative relationship between the first floating point operand and the second floating point operand further comprises:

ignoring the first encoded floating point status information and the second encoded floating point status information when comparing a magnitude of the first floating point operand with a magnitude of the second floating point operand.

16. The method of claim 11, wherein the result indicates the comparative relationship chosen from a group comprising: the first floating point operand is less than the second floating point operand, the first floating point operand is greater than the second floating point operand, the first floating point operand is equal to the second floating point operand, and the first floating point operand cannot be compared to the second floating point operand.

17. A computer-readable medium on which is stored a set of instructions for comparing a first floating point operand to a second floating point operand, each floating point operand having encoded floating point status information, which when executed perform steps comprising:

receiving the first floating point operand and the second floating point operand;

determining a first format of the first floating point operand based on the encoded floating point status information in the first floating point operand;

determining a second format of the second floating point operand based on the encoded floating point status information in the second floating point operand; and

generating a result indicating a comparative relationship between the first floating point operand and the second floating point operand, based at least on the first format and the second format.

18. The computer-readable medium of claim 17, further comprising:
comparing the first floating point operand to the second floating point operand.

19. The computer-readable medium of claim 17, further comprising:
controlling a floating point device based upon the result generated.

20. The computer-readable medium of claim 17, wherein the format is from a group comprising not-a-number (NaN), infinity, normalized, denormalized, zero, invalid operation, overflow, underflow, division by zero, exact, and inexact.

21. The computer-readable medium of claim 17, wherein the step of generating a result indicating the comparative relationship between the first floating point operand and the second floating point operand further comprises:

ignoring the first encoded floating point status information and the second encoded floating point status information when comparing a magnitudes of the first floating point operand with a magnitude of the second floating point operand.

22. The computer-readable medium of claim 17, wherein the result indicates the comparative relationship chosen from a group comprising: the first floating point operand is

less than the second floating point operand, the first floating point operand is greater than the second floating point operand, the first floating point operand is equal to the second floating point operand, and the first floating point operand cannot be compared to the second floating point operand.